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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,363	11/19/2003	Toshihiro Koyama	0020-5200P	3773

2292 7590 02/27/2009

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
02/27/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/715,363	KOYAMA ET AL.	
	Examiner	Art Unit	
	Mark Ruthkosky	1795	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2008*.

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-9,11-13,15-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-9,11-13,15-18 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/10/2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6-9, 11-13, 15-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kizu et al. (US 2003/0165739) in view of Takami et al. (US 5,753,387) and further in view of Ohsaki et al. (US 5,856,043) OR over Ohsaki et al. (US 5,856,043) in view of Kizu et al. (US 2003/0165739) and further in view of Takami et al. (US 5,753,387)

Kizu et al. (US 2003/0165739) teaches a negative electrode for a non-aqueous secondary cell comprising a graphite active material (p. 128), a conductive material including carbon black (p. 141) and a binder (p. 132; p. 128-141.) Graphite is taught as the active material. The lattice spacing is preferably 0.3355-0.3380 (p. 132.) The specific surface area is preferably 1.5-3 m^2/g

(p. 154.) Carbon black is used as a conductive material. The conductive material is preferably less than 1 μm (p. 60-71) and 5 μm (p. 141.) The amount of binder material is preferably 3-8% (p. 159.) The negative electrode material comprises particles having an aspect ratio of 1.0 to 5.0 and a largest particle size of 10 μm or less. The preferred particle size is 5-10 microns (p. 137 and 141.) The reference teaches the battery in an electronic device (col. 1.) The reference is silent to and thus does not teach the electrode to include an aqueous binder. The reference does not teach the density of the negative electrode.

While the references teach that carbonaceous materials of the electrode having a density of at least 1.5 g/cm^3, the references are silent to and thus do not disclose the density of the negative electrode. Ohsaki et al. (US 5,856,043) teaches a negative electrode for a non-aqueous secondary cell comprising graphite, carbon black and a binder (col. 3, line 40 to col. 6, line 30; col. 4, lines 23-30; col. 5, lines 1-20; col. 6, lines 25-30), wherein said carbon black comprises particles having an aspect ratio in the range of 1.0 to 5.0 and a largest particle size of 1-10 and preferably 2-5 μm, wherein said negative electrode has a density of preferably 1.5-1.8 g/cm^3 (col. 7, lines 5-15.) The references do not teach an aqueous binder.

Takami et al. teaches a lithium secondary battery comprising graphite, an amorphous carbon and a binder (col. 4, line 61 to col. 6, line 15; and cols. 7-9, line 5.) Carbon black is an amorphous carbon material. The lattice spacing is preferably not more than 0.340 and the density is 1.8 g/cm^3 (col. 8, line 22.) The specific surface area is preferably 0.1-5 m^2/g (col. 7, line 1-10.) The negative electrode material comprises particles having an aspect ratio of 2.0 to 10.0. The preferred particle size is 5-10 microns. CMC and SBR binders are noted for binding the carbon materials into an electrode. These materials are described in the instant specification

as aqueous binders. The reference does not teach use of these binders with water as a solvent or dispersion medium (instant specification, page 9, lines 15-20.) However, in the instant invention and in the Takami invention the dispersion medium is removed from the electrode and is therefore not given patentable weight. The reference teaches mixing and pressing the electrode materials (col. 17, lines 50-55.) The reference teaches the battery in an electronic device (col. 1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the binders taught in Takami et al. in the batteries of Kizu et al. (US 2003/0165739) and Ohsaki et al. (US 5,856,043) in order to bind the electrode materials in the form of an electrode. The reference shows that these materials effectively bind carbonaceous electrode materials in a lithium battery.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare a negative electrode having a density of at least 1.5 g/cm^3 because the prior art recognizes that if the packing density is too low, the electric conductivity of the electrode becomes lowered and advantages in load characteristics and safety are lost ('043, col. 7, lines 5-15.) The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Response to Arguments

Applicant's arguments filed 4/8/2008 have been fully considered but they are not persuasive.

Applicant argues that the Kizu reference does not teach aqueous binders or the claimed electrode density. This was acknowledged in the rejection. The Kizu reference teaches a non-

aqueous cell with a negative electrode of graphite, carbon black formed with a binder. The particle size of the conductive carbon black is not more than 5 microns.

Applicant argues that the Takami et al. reference fails to teach the use of a carbonaceous material that does not have a graphite structure as a conductive material. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Kizu reference teaches a non-aqueous cell with a negative electrode of graphite, carbon black formed with a binder.

Applicant argues that the Ohsaki et al. reference does not describe or teach the use of water as a solvent and thus the use of an aqueous binder mixture. In Ohsaki, CMC and SBR binders are noted for binding the carbon materials into an electrode. These materials are described in the instant specification as aqueous binders. The reference does not teach use of these binders with water as a solvent or dispersion medium (instant specification, page 9, lines 15-20.) However, in the instant invention and in the Takami invention the dispersion medium is removed from the electrode and is therefore not given patentable weight. CMC and SBR are aqueous binders as claimed.

Applicants conclude that the present invention would not have been obvious from any combination of Kizu et al US '739, Ohsaki et al. US '043 and Takami et al. US '387 because one would find no reason or rationale that would allow them to arrive at the instant invention as claimed. This is not persuasive. As noted in the rejection, one of ordinary skill in the art would be motivated to use the binders taught in Takami et al. in the battery of Kizu et al. (US

2003/0165739) and Ohsaki et al. (US 5,856,043) in order to effectively bind the electrode materials in a lithium battery. Further, one of ordinary skill in the art would be motivated to prepare a negative electrode having a density of at least 1.5 g/cm^3 because the prior art recognizes that if the packing density is too low, the electric conductivity of the electrode becomes lowered and advantages in load characteristics and safety are lost ('043, col. 7, lines 5-15.) The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.)

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

/Mark Ruthkosky/

Primary Examiner, Art Unit 1795